

REPPERGER RESEARCH INTERN PROGRAM

RESEARCH PROJECT #: AFRL-RHD-23-08

Machine Learning Data Analysis for Optical Distortion Computations

PROJECT DESCRIPTION: Statistical analysis can aid in the discovery of relationships between data items within large datasets. Using previously generated data from a recent machine learning application on eyewear optical distortions, students will utilize techniques to estimate the strength and direction of relationships between two or more variables. Students will utilize machine learning models along with computer vision computations to analyze optical distortion metrics. Methods include the use of descriptive statistics to generate summary statistics, measures of central tendency, dispersion, shape, and correlation.

ACADEMIC LEVEL: Bachelor's, Master's

DISCIPLINE NEEDED:

- Computer Science
- Mathematics
- Electrical Engineering

RESEARCH LOCATION: JBSA-Fort Sam Houston, San Antonio, Texas

RESEARCH MENTOR: Brenda Novar, MS
Engineering Management, Drexel University, 2010



Ms. Brenda Novar is a Research Electrical Engineer with the Bioeffects Division of the Airman Systems Directorate, Air Force Research Laboratory. She joined the group in 2008, providing engineering support to vision science research projects, conducting human use studies, and applying technical skillsets to the development and characterization of specialized optical systems. She also worked in the development of graphical user interfaces for the automation of instrument control and the acquisition of data. She served as the program manager for an advanced technology demonstration program for aircrew protective technologies. She currently serves as a project lead and primary investigator for research and modeling efforts that contribute to knowledge gaps in optical quality metrics for developmental eyewear. Research topics of current interest include artificial intelligence, machine learning, bio-inspired vision sensors and physiological control systems. *Photo courtesy of the U.S. Air Force Research Laboratory.*